عنوان مقاله:

Flutter of cantilever joined beams with variable thickness and hinge positions for piezoelectric energy harvesting purpose

محل انتشار:

بیست و ششمین همایش سالانه بین المللی انجمن مهندسان مکانیک ایران (سال: 1397)

تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

In this paper, flutter frequency behavior of the two cantilevered beam, hinged together has been studied. For this purpose. by varying the thickness and width of the secondary beam, tl1e frequency behavior is compared to a simple cantilevered beam with identical length. The governing equation is achieved using Euler-Bernoulli beam theory and series method as an analytical aproach is used for solution. The obtained results were compared with the previous investigations. According to the previous studies, there is a strong connection between the output power of the harvester and the system llutter frequency. In this paper, we intend to increase the frequency and therefore the system output power with the changes in the geometry of the second beam. So. with the introduction of the ratio of width and thickness ratio, in exchange for the location of the hinge, we consider the flutter frequency behavior. By optimizing the changes in terms of the constant length and volume of the structure, we have achieved a significant increase in the flutter frequency, which improves the output power of the system.

کلمات کلیدی:

Renewable energy; Wind energy harvesting;Piezoelecuic; Flutter; Hinged beams

لینک ثابت مقاله در پایگاه سیویلیکا:

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